Brane Craft

Completed Technology Project (2017 - 2019)

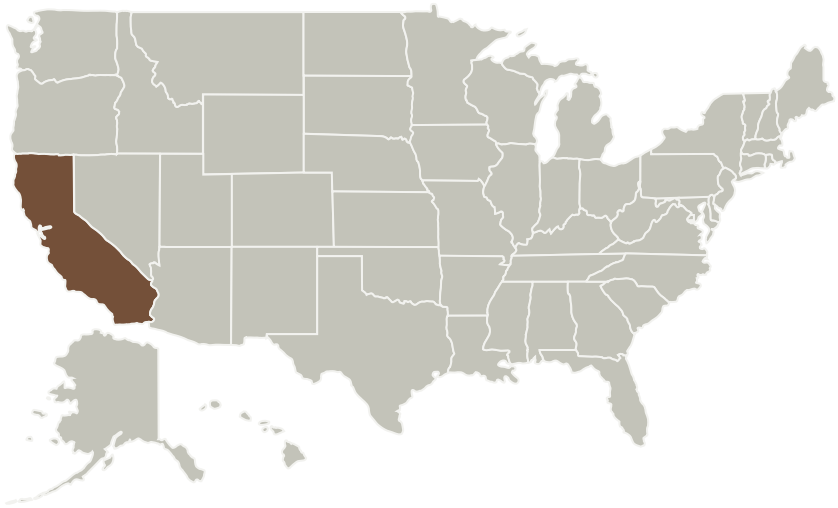
Project Introduction

This effort will further develop the active membrane spacecraft concept called "Brane Craft" initially studied in a NIAC Phase I grant. The Brane Craft is an essentially two-dimensional spacecraft with integrated solar cells, power system, communications, command and control, attitude determination, attitude control, electric propulsion, and shape control systems. The Phase II effort will analyze and document the benefits, limitations, mission operations, and size-scaling of Brane Craft for removal of orbital debris, and will attempt laboratory demonstrations of thin film electronics for communications, command and control, power conditioning, sensing, and shape control. We will identify the most promising fabrication technologies, develop a technology roadmap, and provide recommendations for further development.

Anticipated Benefits

Potential orbital debris removal technology

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
The Aerospace Corporation	Lead Organization	Industry	El Segundo, California

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

The Aerospace Corporation

Responsible Program:

NASA Innovative Advanced Concepts

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Primary U.S. Work Locations
California

Project Website:

https://www.nasa.gov/directorates/spacetech/niac/index.html#.VQb6I0jJzyE

Project Management

Program Director:

Jason E Derleth

Program Manager:

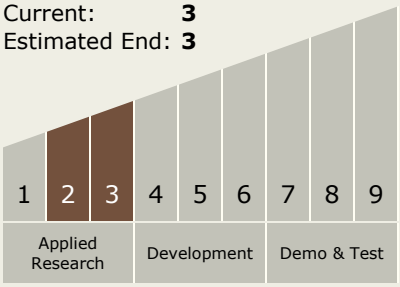
Eric A Eberly

Principal Investigator:

Siegfried Janson

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors

Target Destination

Earth